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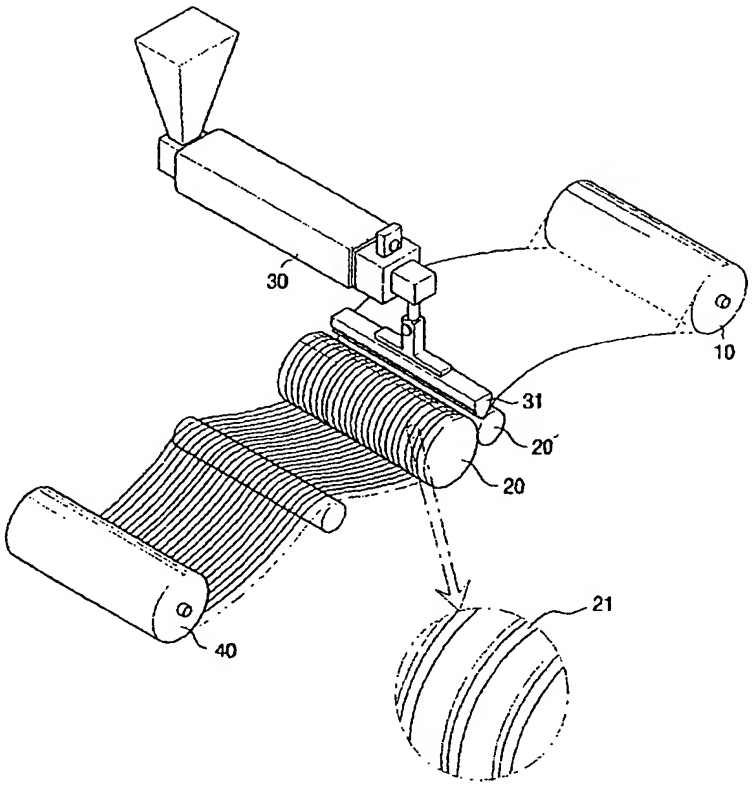
[Continued on next page]

(54) **Title:** METHOD OF MANUFACTURING FILM FOR VACUUM PACKAGING BAG, AND VACUUM PACKAGING BAG MANUFACTURED USING THE FILM



(57) **Abstract:** Disclosed is a method of manufacturing a film (40) for a vacuum packing bag, by laminating, using laminating rolls (20, 20'), resin onto sheet (10) which is prepared in a conventional way, and winding the resin-laminated sheet. One of the laminating rolls (20,20'), which serves as a cooling roll (20), is defined with a plurality of circumferential grooves (21) which are spaced apart one from another by a predetermined interval. An extruder (30) is disposed between the laminating rolls (20, 20'). The resin which is extruded from a nozzle (32) of the extruder (30), is laminated onto the sheet (10) in such a way as to define flowing paths on the resin-laminated film (40). The present invention also concerns a vacuum packaging bag manufactured using the film (40).

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METHOD OF MANUFACTURING FILM FOR VACUUM PACKAGING BAG, AND VACUUM PACKAGING BAG MANUFACTURED USING THE FILM

Technical Field

The present invention relates to film for a vacuum packaging bag, and more particularly, the present invention relates to a method of manufacturing film for a vacuum packaging bag, in which resin extruded from an extruder is laminated onto sheet in a manner such that, by a cooling roll formed with circumferential grooves, prominences are formed on a surface of the resultant film and flowing paths are defined between the prominences, whereby, upon implementing a vacuum packaging work, vacuum can be easily introduced into the vacuum packaging bag through the flowing paths. The present invention further relates to a vacuum packaging bag manufactured using the film.

Background Art

Generally, foodstuff, such as meat or processed meat, which is to be stored for a lengthy period of time, is vacuum-packaged, in a manner such that it is accommodated in a vacuum packaging bag, vacuum is introduced into the vacuum packaging bag using an air pump or a vacuumizing device, and then, an entrance of the vacuum packaging bag is sealed by virtue of heat fusion.

FIG. 1 is a perspective view illustrating a conventional vacuum packaging vinyl bag. As shown in FIG. 1, the conventional vacuum packaging vinyl bag has a bag body 110, a heat-fused portion 120 and an opening 130. The bag body 110 is composed of a pair of vinyl packaging elements 111 and 112 which define therebetween an inner space for receiving foodstuff. The heat-fused portion 120 is formed at left and right ends and a lower end of the bag body 110 to prevent content from leaking. The opening 130 is defined at an upper end of the bag body 110, so that, through the opening 130, foodstuff can be accommodated in the inner space of bag body 110 and air existing in the

inner space can be taken out of the bag body 110.

Explaining in detail a procedure of using the conventional vacuum packaging vinyl bag constructed as mentioned above, after foodstuff to be stored is accommodated in the inner space through the opening 130, by taking out air in the bag body 110 using an air pump or a vacuumizing device, vacuum is introduced into the inner space of the bag body 110. Then, by sealing the opening 130 by heat fusion, a vacuum packaging work is completed. Conventionally, the bag body 110 is made of thermoplastic resin such as polyethylene, high density polyethylene or polypropylene, which can be fused by heat. When heated to a predetermined temperature, the bag body 110 is fused to airtightly seal the opening 130.

However, the conventional vacuum packaging vinyl bag is encountered with a problem in that, when air existing in the vinyl bag is taken out using the vacuumizing device after foodstuff is accommodated in the vinyl bag, thereby to produce vacuum in the vinyl bag, as the pair of vinyl packaging elements 111 and 112 which constitute the bag body 110, closely adhere to each other, air which exists adjoining the lower end of the bag body 110, cannot be properly taken out of the vacuum packaging vinyl bag and remains therein.

To cope with this problem, a technique is disclosed in the art, in which, while film for a vacuum packaging vinyl bag is manufactured by allowing sheet to undergo a laminating process, the elongate film is embossed by means of embossing molds to define flowing paths between prominences. That is to say, due to the fact that the flowing paths are defined in the film for a vacuum packaging vinyl bag, when air in the vacuum packaging vinyl bag is taken out using an air pump or a vacuumizing device, because air can be smoothly sucked out through the flowing paths, even air which exists adjoining a lower end of the vinyl bag, can be properly taken out.

FIG. 2 is a partially enlarged perspective view

illustrating another conventional vacuum packaging vinyl bag which is defined with flowing paths. In this conventional vacuum packaging vinyl bag which is defined with flowing paths, one vinyl packaging element 111 of the pair of vinyl packaging elements 111 and 112 which constitute the bag body 110 of the aforementioned conventional vacuum packaging vinyl bag, undergoes an embossing process in such a way as to allow prominences 116 to be formed on a surface thereof. Hence, due to the presence of the flowing paths 115 each of which is defined between two prominences 116, a vacuum packaging work can be implemented in a reliable manner.

In other words, the flowing paths 115 are defined by forming the protrusions 116 at a predetermined interval by the embossing process. The prominences 116 occupy a large area on the vinyl packaging element 111, and each flowing path 115 has relatively a narrow width. The flowing paths 115 serve as moving passages of air when implementing a vacuum packaging work after foodstuff is accommodated in the vacuum packaging vinyl bag. By defining the flowing paths 115 in this way, merits are provided in that even the air which exists adjoining the lower end of the vinyl bag, can be easily taken out.

However, the just described-above conventional vacuum packaging vinyl bag constructed as mentioned above suffers from defects in that, when forming the prominences 116 and thereby defining the flowing paths 115 by embossing the laminated film, since the film is elongated between the prominences 115 and the flowing paths 116, a thickness of the film is decreased at elongated regions. Due to this, the film can be partially torn, or as the film is elongated, a pinhole which is defined in the film, can develop to a hole. Due to this, after a vacuum packaging work is implemented using the conventional vacuum packaging vinyl bag, because a vacuum pressure is vanished through the hole, the vacuum packaging bag cannot adequately conduct its function. Moreover, if the embossing

molds are employed for a great period of time, since they are worn out, they should be replaced with new ones, whereby a great deal of expenses are required.

Disclosure of the Invention

Accordingly, the present invention has been made in an effort to solve the problems occurring in the related art, and an object of the present invention is to provide a method of manufacturing film for a vacuum packaging bag, in which prominences are formed upon laminating resin onto sheet in a manner such that flowing paths are defined between the prominences, whereby defects caused, due to a pinhole, upon performing an embossing process for defining flowing paths in the conventional art, can be effectively coped with, and vacuum can be easily produced in the vacuum packaging bag, and to provide a vacuum packaging bag manufactured using the film.

In order to achieve the above object, according to one aspect of the present invention, there is provided a method of manufacturing film for a vacuum packaging bag, by laminating, using laminating rolls, resin onto sheet which is prepared in a conventional way, and winding the resin-laminated sheet, characterized in that one of the laminating rolls, which serves as a cooling roll, is defined with a plurality of circumferential grooves which are spaced apart one from another by a predetermined interval, an extruder is disposed between the laminating rolls, the resin which is extruded from a nozzle of the extruder, is laminated onto the sheet in such a way as to define flowing paths on the resin-laminated film.

According to another aspect of the present invention, there is provided film for a vacuum packaging bag, manufactured by the method.

According to still another aspect of the present invention, there is provided a vacuum packaging bag manufactured using the film.

Brief Description of the Drawings

The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a perspective view illustrating a conventional vacuum packaging vinyl bag;

FIG. 2 is a partially enlarged perspective view illustrating another conventional vacuum packaging vinyl bag which is defined with flowing paths;

FIG. 3 is a partially enlarged schematic perspective view for explaining a procedure for forming prominences on a surface of film in accordance with an embodiment of the present invention;

FIG. 4 is a bottom perspective view of an extruder shown in FIG. 3;

FIG. 5 is a partially enlarged cross-sectional view illustrating film for a vacuum packaging bag, which is manufactured to have flowing paths according to the present invention; and

FIG. 6 is a perspective view illustrating a vacuum packaging bag which is manufactured using the film shown in FIG. 5.

Best Mode for Carrying Out the Invention

Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

FIG. 3 is a partially enlarged schematic perspective view for explaining a procedure for forming prominences on a surface of film in accordance with an embodiment of the present invention. As can be readily seen from FIG. 3, in the procedure for forming prominences on a surface of film according to the present invention, in the course of

laminating resin onto sheet 10 using a cooling roll 20 and a laminating roll 20', the cooling roll 20 is defined with a plurality of circumferential grooves 21 which are spaced apart one from another by a desired interval. An extruder 30 is disposed between the cooling roll 20 and the laminating roll 20'. By laminating resin which is extruded from a nozzle 32 of the extruder 30, onto the sheet 10, laminated film 40 which is formed with prominences 41 (see FIG. 5), is manufactured.

FIG. 4 is a bottom perspective view of the extruder shown in FIG. 3. As shown in FIG. 4, the extruder 30 has a nozzle section 31. The nozzle section 31 is formed with the nozzle 32 from which resin is extruded.

Describing in detail the procedure for forming prominences on a surface of film according to the present invention, with reference to FIGs. 3 and 4, the sheet 10 passes through the cooling roll 20 and the laminating roll 20' in order to undergo a laminating process. At this time, the plurality of circumferential grooves 21 are defined on the cooling roll 20 in a manner such that they are spaced apart one from another by the desired interval. The extruder 30 is disposed between the cooling roll 20 having defined thereon the circumferential grooves 21 and the laminating roll 20'. As resin which is extruded from the nozzle 32 of the extruder 30, is laminated onto the sheet 10, by lamination between the resin and the sheet 10, the prominences 41 are formed on an upper surface of the laminated film 40. In other words, due to the presence of the circumferential grooves 21 which are defined on a circumferential outer surface of the cooling roll 20, the prominences 41 are formed on the upper surface of the laminated film 40. As portions of the cooling roll 20 which portions are positioned between the circumferential grooves 21, squeeze resin against the laminating roll 20', flowing paths 42 (see FIG. 5) are defined between the prominences 41. The flowing paths 42 which are defined in this way, serve as air passages upon implementing a

vacuum packaging work, and thereby facilitates vacuum to be easily produced in a vacuum packaging bag 50 (see FIG. 6).

The circumferential grooves 21 which are defined on the circumferential outer surface of the cooling roll 20, can have a variety of cross-sections including a rectangular one as shown. A thickness and a width of each of the prominences 41 which are formed on the upper surface of the laminated film 40, can be adjusted by altering a size of the circumferential groove 21. Also, a width of each of the flowing paths 42 can be adjusted by altering the interval between two of the circumferential grooves 21 which are defined on the circumferential outer surface of the cooling roll 20. Hence, it is possible to manufacture film for a vacuum packaging bag, suited to a use.

By the fact that the prominences 41 are formed upon performing the laminating process while manufacturing the film for a vacuum packaging bag, since the flowing paths 42 can be defined without requiring a separate embossing process, a processing time is shortened. Also, because embossing molds are not needed, expenses can be saved. Moreover, it is possible to prevent a vacuum pressure from being unintensionally vanished after implementing the vacuum packaging work, due to the presence of a hole which may be otherwise created upon performing the embossing process in the conventional art.

FIG. 5 is a partially enlarged cross-sectional view illustrating film for a vacuum packaging bag, which is manufactured to have the flowing paths according to the present invention. As shown in FIG. 5, in the laminated film 40 for a vacuum packaging bag according to the present invention, the prominences 41 are formed on a sheet layer 43, and the flowing paths 42 are defined between the prominences 41. Due to the presence of the flowing paths 42 which are defined between the prominences 41, when implementing the vacuum packaging work, it is possible to take out air existing adjacent to a closed end of the vacuum packaging bag 50, whereby vacuum can be easily

introduced into the vacuum packaging bag 50. Furthermore, due to the fact that a width of the flowing path 42 can be freely adjusted upon forming the prominences 41, it is possible to manufacture film for a vacuum packaging bag, suited to a use.

The vacuum packaging bag 50 can be manufactured using the film for a vacuum packaging bag, constructed as mentioned above, in the same way as the conventional art.

FIG. 6 is a perspective view illustrating the vacuum packaging bag which is manufactured using the film shown in FIG. 5. As shown in FIG. 6, the vacuum packaging bag 50 is composed of a pair of packaging film elements 51 and 52. The film for a vacuum packaging bag which film is defined with the flowing paths 42 according to the present invention, is employed to form the vacuum packaging bag 50.

In the case that the vacuum packaging bag 50 is manufactured employing the film for a vacuum packaging bag according to the present invention, due to the presence of the flowing paths 42 which are defined between the prominences 41 formed on the upper surface of the film for a vacuum packaging bag, when implementing the vacuum packaging work, it is possible to reliably take out air existing in the vacuum packaging bag 50, whereby vacuum can be easily introduced into the vacuum packaging bag 50. Also, it is possible to prevent a vacuum pressure from being unintensionally vanished after implementing the vacuum packaging work, due to the presence of a hole which may be otherwise created upon performing the embossing process in the conventional art. Thus, vacuum can be maintained for a lengthy period of time.

While it was explained in the above descriptions that the film which is manufactured according to the present invention, is employed to form the pair of packaging film elements 51 and 52 which constitute the vacuum packaging bag 50, the film can be employed to form only one packaging film element 51 or 52. Vacuum packaging bags having a diversity of contours can be manufactured employing the

film which is formed according to the present invention.

Hereinafter, the present invention will be described in further detail through examples.

Example 1

Vacuum packaging bags were manufactured in the same way as the conventional art, employing the film for a vacuum packaging bag which is formed according to the present invention and has a flowing path width of 0.1 mm and a prominence width of 0.5 mm. Then, 100 samples were prepared by implementing the vacuum packaging work for the manufactured vacuum packaging bags. Thereupon, after 100 hours are lapsed, the number of vacuum pressure-vanished samples was counted. The result is presented in TABLE 1 given below.

Comparative Example 1

100 samples were prepared by implementing the vacuum packaging work using the conventional suction device, for the conventional vacuum packaging bags as shown in FIG. 2. Thereupon, after 100 hours are lapsed, the number of vacuum pressure-vanished samples was counted. The result is presented in TABLE 1.

TABLE 1

Classification	Example 1	Comparative Example 1
Number of vacuum pressure-vanished samples	1	13

As can be readily seen from the TABLE 1, in the case of the Example 1 according to the present invention, the number of vacuum pressure-vanished sample was 1, and in the case of the Comparative Example 1 according to the conventional art, the number of vacuum pressure-vanished samples was 13. Therefore, the vacuum packaging bag according to the present invention was maintained in a

vacuum state for a lengthier time of period when compared to the conventional vacuum packaging bag. As a consequence, a person skilled in the art will readily recognize that the present invention effectively copes with defects which are caused upon performing an embossing process for defining flowing paths in the conventional art.

Industrial Applicability

As a result, a method of manufacturing film for a vacuum packaging bag, according to the present invention, provides advantages in that, since prominences such as polygonal dots are formed upon laminating resin onto sheet in such a way as to define flowing paths therebetween, defects which are caused, due to a pinhole, upon performing an embossing process for defining flowing paths in the conventional art, is effectively coped with. Also, because a thickness and a width of each prominence and a width of each flowing path can be adjusted in the course of manufacturing the film for a vacuum packaging bag, it is possible to render film for a vacuum packaging bag, suited to a use.

Further, due to the fact that the present invention provides a vacuum packaging bag manufactured by the method, in the case of manufacturing the vacuum packaging bag using the film, due to the presence of the flowing paths defined on the film of the vacuum packaging bag, vacuum can be easily produced in the vacuum packaging bag upon implanting a vacuum packaging work. In particular, due to the fact that the likelihood of a hole to be created in the vacuum packaging bag and thereby a vacuum pressure to be vanished is decreased, it is possible to maintain vacuum for a lengthy period of time.

In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set

forth in the following claims.

Claims

1. A method of manufacturing film for a vacuum packaging bag, by laminating, using laminating rolls, resin onto sheet which is prepared in a conventional way, and winding the resin-laminated sheet, characterized in that one of the laminating rolls, which serves as a cooling roll, is defined with a plurality of circumferential grooves which are spaced apart one from another by a predetermined interval, an extruder is disposed between the laminating rolls, the resin which is extruded from a nozzle of the extruder, is laminated onto the sheet in such a way as to define flowing paths on the resin-laminated film.

2. Film for a vacuum packaging bag, manufactured by the method according to claim 1.

3. A vacuum packaging bag manufactured using the film according to claim 2.

FIG.1

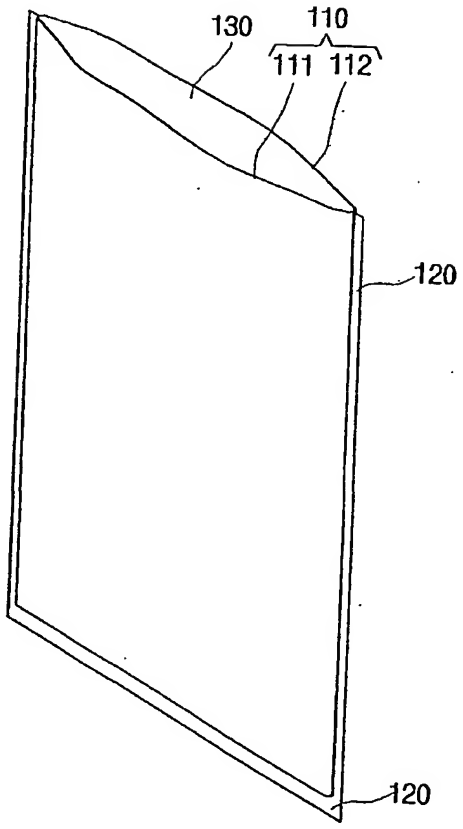


FIG.2

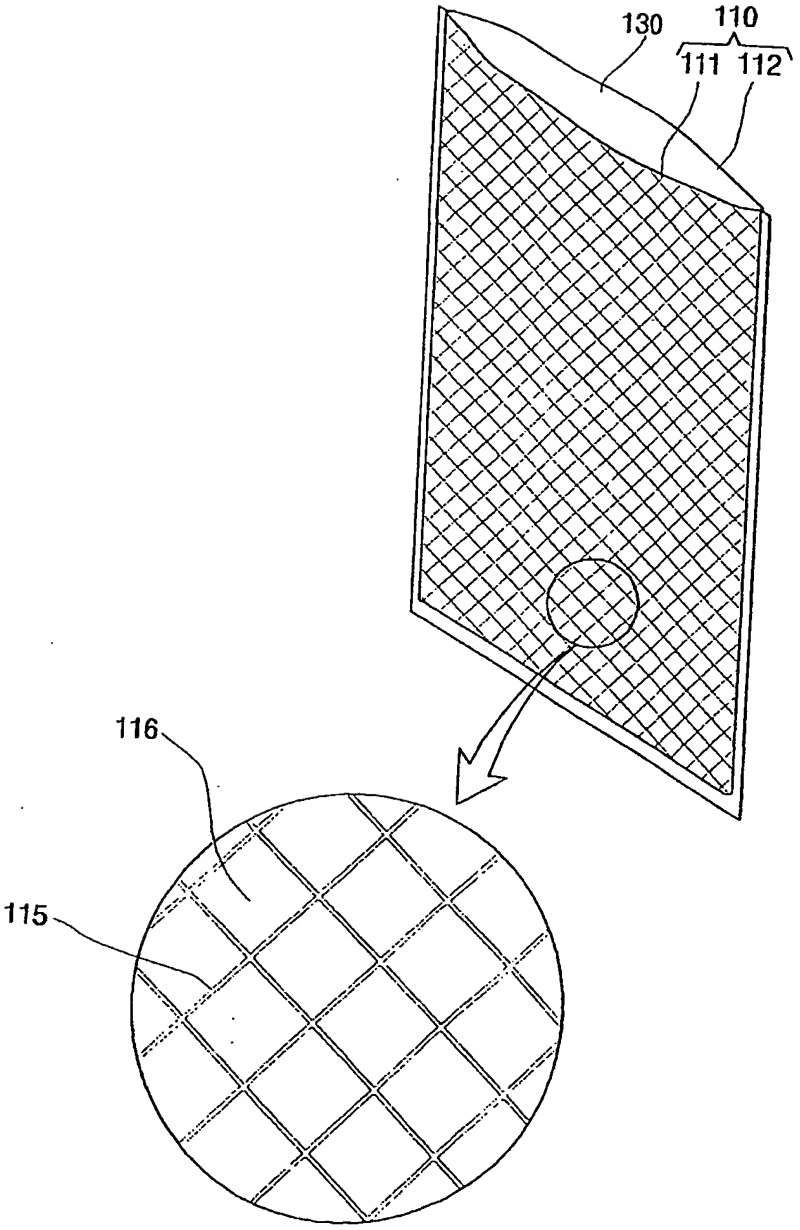


FIG.3

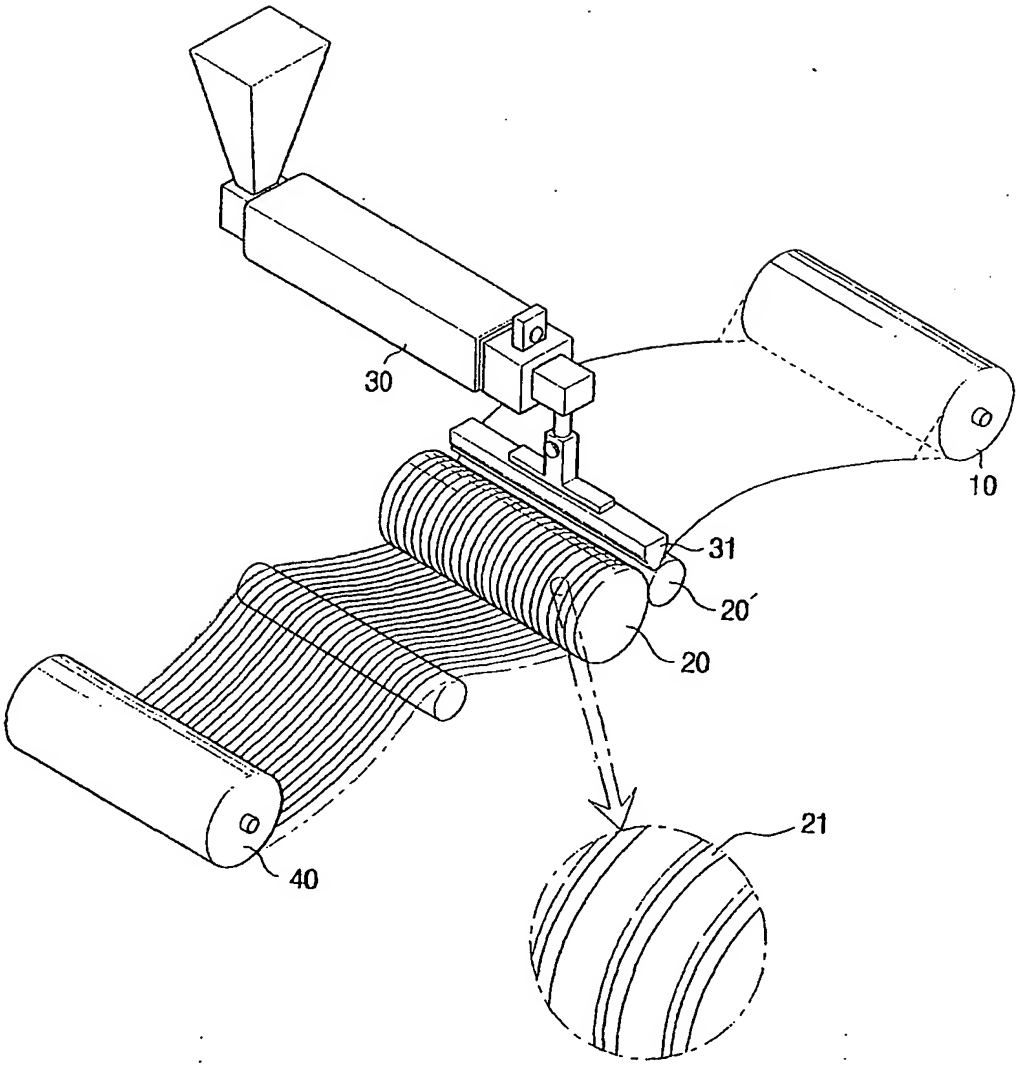


FIG.4

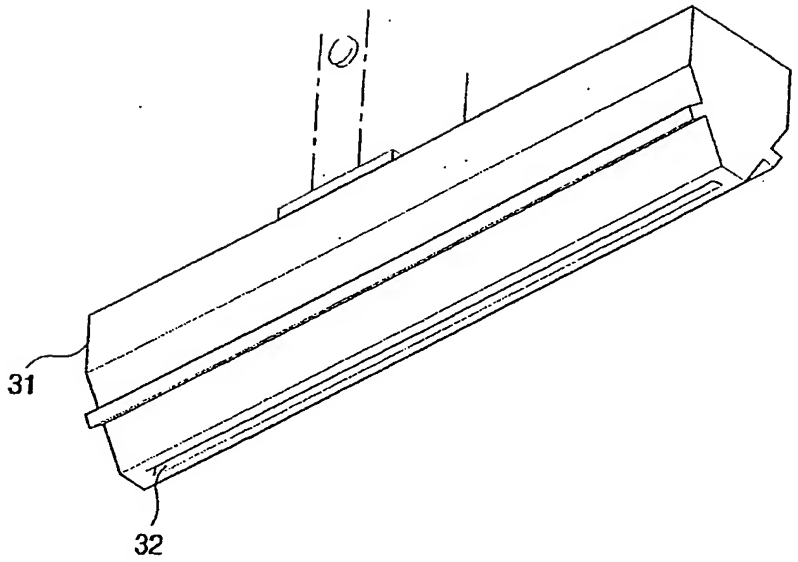


FIG.5

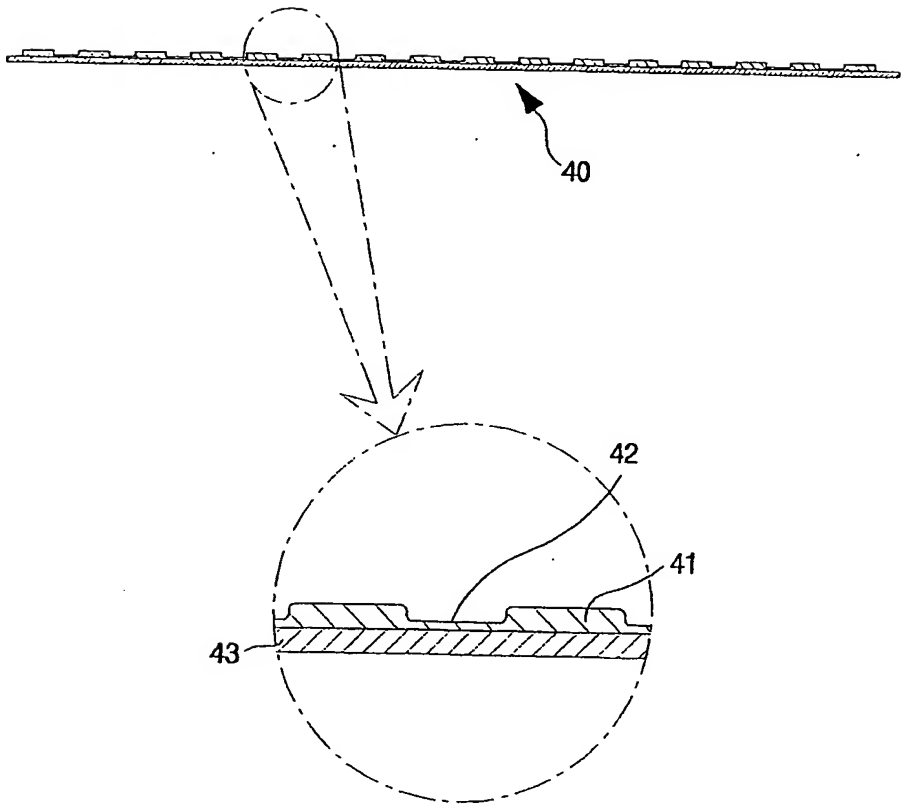
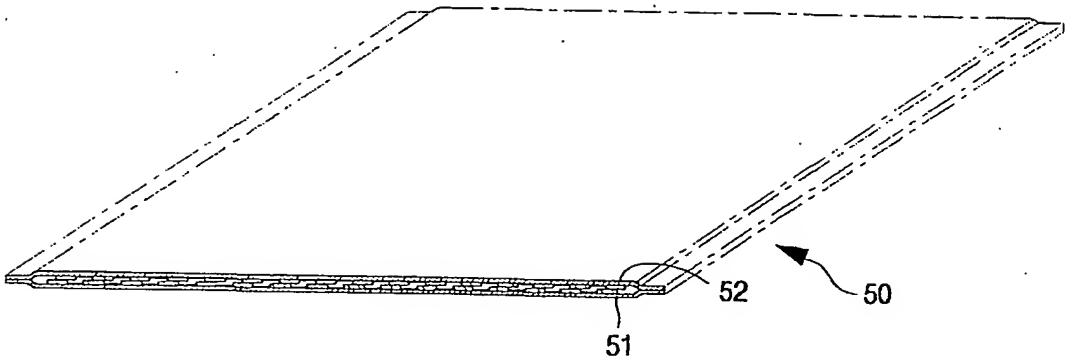


FIG.6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 01/00824

CLASSIFICATION OF SUBJECT MATTER

IPC[7]: B29C 47/02, B32B 33/00, B65D 30/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[7]: B29C, B32B, B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 09 131846 A (TOPPAN PRINTING CO LTD) 20 May 1997 (20.05.97) ; in: Patent Abstracts of Japan	1-3
Y	JP 06 156530 A (DAINIPPON PRINTING CO LTD) 3 June 1994 (03.06.94) ; in: Patent Abstracts of Japan	1-3
A	JP 2000 218675 A (TOPPAN PRINTING CO LTD) 8 August 2000 (08.08.00) ; in: Patent Abstracts of Japan	1-3
A	JP 11 254631 A (TOPPAN PRINTING CO LTD) 21 September 1999 (21.09.99)	1-3

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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„&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 January 2002 (08.01.2002)	21 January 2002 (21.01.2002)
Name and mailing adress of the ISA/AT Austrian Patent Office Kohlmarkt 8-10; A-1014 Vienna Facsimile No. 1/53424/535	Authorized officer SCHMELZER Telephone No. 1/53424/469

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/KR 01/00824

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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JP A2 9131846	20-05-1997	JP B2 3149749	26-03-2001
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